

N° 5005



A.D. 1893

*Date of Application, 8th Mar., 1893**Complete Specification Left, 8th Dec., 1893—Accepted, 13th Jan., 1894*

PROVISIONAL SPECIFICATION.

A Device for Preventing the Bursting of Gas Engine and other Water Jacketed Cylinders or Pipes by the Freezing of the Water.

I, ENOCH ROLLASON, of 12 Taylor Street, in the City of Birmingham, Engineer, do hereby declare the nature of this invention to be as follows:—

My invention relates to gas engine cylinders, and also to other water jacketed cylinders or water pipes, and its object is to prevent the rupture of the external casing or cylinder or pipe in the event of the water becoming frozen from any cause.

My invention consists in a conveniently placed relief aperture or apertures over which is or are stretched a sheet or sheets of black rubber or other suitable extensible and elastic material.

In carrying my invention into effect as applied to a gas engine cylinder arranged in a usual manner, I place my aperture at a position removed from the outlet water circulating pipe of the water jacket. I preferably pierce or drill or form the said aperture in the casing as a hole of considerable diameter and I bolt over the said hole a flange having a hole of preferably smaller diameter. The hole in the flange has a chamfer or countersunk to form a cone with the wide end outwards and I arrange the inner edge of the conical aperture as a short round or fillet. Under the flange I place a black rubber sheet of sufficient thickness to hold in the water of the water jacket against any water pressure from within. If from any cause the water in the jacket freezes and the circulating pipes do not permit of the expansion of the ice in the act of formation, then the water or ice is forced out through my conical aperture and the rubber sheet is bulged or expanded through the said aperture to a sufficient extent to allow relief to the solidifying water such as to prevent bursting or fracture of the water jacket casing or cylinder. The conical aperture allows of rapid and ready relief and avoids the blocking up of the said aperture by the issuing ice.

When the ice melts again the elastic rubber returns to its former position again, and the work of the engine proceeds without interruption.

Where heavy water pressures are used I arrange my flange with its conical aperture with a metallic valve pressed down by a spring exterior to the rubber sheet so that when the rubber sheet is forced out by the internal water pressure it is supported by the internal surface of the valve. If, however, the water should freeze the valve does not prevent free expansion through the aperture to relieve the cylinder and prevent fracture.

My invention may be similarly applied to other water jacketed cylinders, such as those of air compressors or to any vessel or pipe containing water which may at times freeze.

Dated this 7th day of March 1893.

MARKS & CLERK,

13, Temple Street, Birmingham, Agents for the Applicant.

[Price 1d.]



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Device for Preventing Bursting of Gas Engine and other Water Jacketed Cylinders, &c.

COMPLETE SPECIFICATION.

A Device for Preventing the Bursting of Gas Engine and other Water Jacketed Cylinders or Pipes by the Freezing of the Water.

I, ENOCH ROLLASON, of 190 Cromwell Street, in the City of Birmingham, (formerly of 12 Taylor Street, Birmingham aforesaid) Engineer, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

My invention relates to gas engine cylinders, and also to other water jacketed cylinders or water pipes, and its object is to prevent the rupture of the external casing or cylinder or pipe in the event of the water becoming frozen from any cause.

My invention consists in a conveniently placed relief aperture or apertures over which is or are stretched a sheet or sheets of black rubber or other suitable extensible and elastic material. 10

Referring to the accompanying sheet of drawings:—

Figure 1 is a longitudinal section through part of a gas engine cylinder showing a simple method of applying my invention.

Figure 2 is a similar section showing a modification. 15

In carrying my invention into effect (see Figure 1) as applied to a gas engine cylinder as A arranged in a usual manner, I place my aperture B¹ at a position removed from the outlet water circulating pipe of the water jacket B. I preferably pierce or drill or form the said aperture in the casing as a hole of considerable diameter and I bolt over the said hole a flange C having a hole of preferably smaller diameter. The hole C¹ in the flange C has a chamfer or countersunk to form a cone with the wide end outwards and I arrange the inner edge of the conical aperture as a short round or fillet. Under the flange C I place a black rubber sheet D, of sufficient thickness to hold in the water of the water jacket B against any water pressure from within. If from any cause the water in the said jacket freezes and the circulating pipes do not permit of the expansion of the ice in the act of formation, then the water or ice is forced out through my conical aperture C¹ and the rubber sheet D is bulged or expanded through the said aperture to a sufficient extent to allow relief to the solidifying water such as to prevent bursting or fracture of the water jacket casing or cylinder. The conical aperture allows of rapid and ready relief and avoids the blocking up of the said aperture by the issuing ice. 20

When the ice melts again the elastic rubber returns to its former position again, and the work of the engine proceeds without interruption.

Where heavy water pressures are used I arrange my flange C with its conical aperture C¹ (Figure 2) with a metallic or other valve E pressed down by a spring F exterior to the rubber sheet D so that when the rubber sheet is forced out by the internal water pressure it is supported by the internal surface of the valve E. If, however, the water should freeze the valve E does not prevent free expansion through the aperture to relieve the cylinder and prevent fracture. 25

The spring F, is conveniently held against the valve E by the cap G and ball or sphere H, which ball or sphere may be held by a cross piece attached to two pillars as shown. 30

My invention may be similarly applied to other water jacketed cylinders, such as those of air compressors or to any vessel or pipe containing water which may at times freeze. 35

It is obvious that although I prefer a rubber sheet in conjunction with the valve E shown in Figure 2, yet the device will act without the rubber or other sheet if the valve E be made sufficiently water tight and this modification will also carry my invention into effect. 40

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Device for Preventing Bursting of Gas Engine and other Water Jacketed Cylinders, &c.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:—

1. A device for preventing the bursting of gas engine and other water jacketed cylinders or pipes by the freezing of water consisting of a relief or relief apertures over which is or are stretched a sheet or sheets of black india-rubber or other suitable extensible material substantially as and for the purposes hereinbefore described.

2. A device for preventing the bursting of gas engine and other water jacketed cylinders or pipes by the freezing of water consisting of a conical relief aperture as C' with a flange as C holding down a rubber sheet as D Figure 1, or with an added valve as E Figure 2, substantially as and for the purposes hereinbefore described reference being had to the accompanying drawings.

3. A device as claimed in the first claim but having a valve only to prevent the exit of the jacket water substantially as hereinbefore described.

Dated this 7th day of December 1893.

MARKS & CLERK,

13, Temple Street, Birmingham, Agents for the Applicant.

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ROLLASON'S COMPLETE SPECIFICATION.

(1 SHEET)

FIG. 1

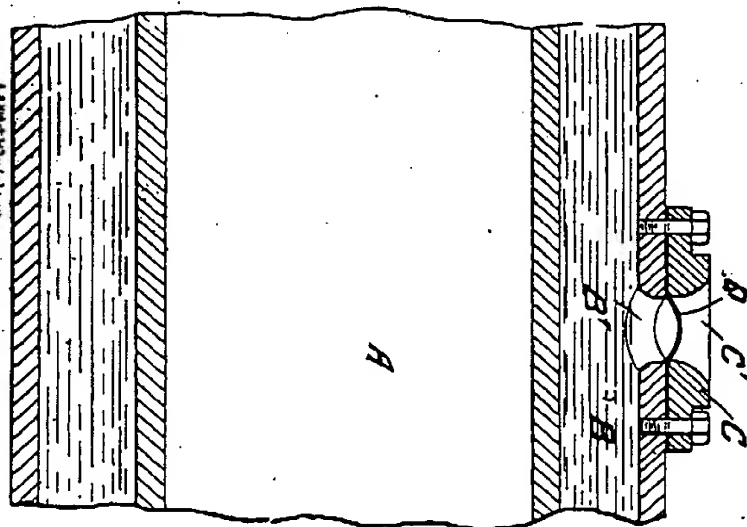
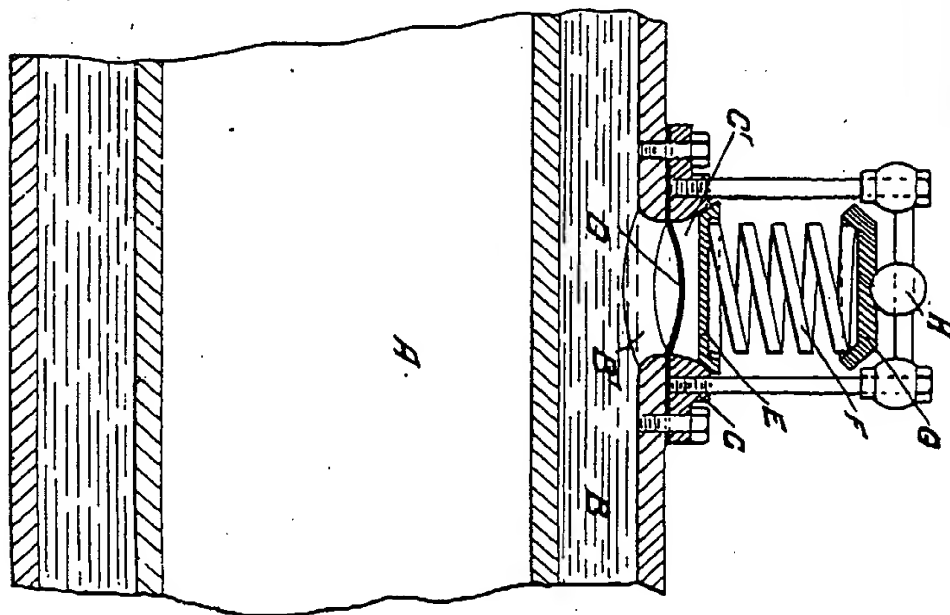


FIG. 2



London: Printed by DARTON and SON Ltd.
for Her Majesty's Stationery Office. 1894.

Mulby & Sons, Photo-Litho.

[This Drawing is a reproduction of the Original on a reduced scale.]